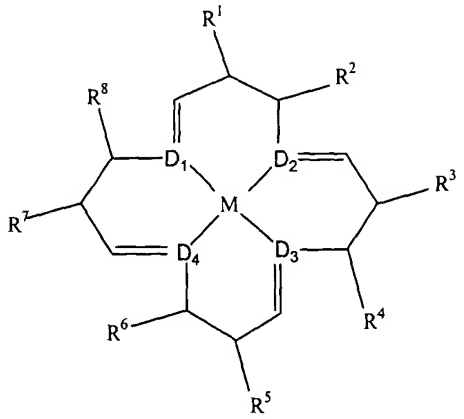
WHAT IS CLAIMED IS:

1. A polymer comprising the reaction product of:

(a) a macrocyclic transition metal complex of the general formula:



wherein M is a transition metal ion; D_1, D_2, D_3 and D_4 can be the same or different and can be N or P; and each of R^1 and R^2, R^3 and R^4, R^5 and R^6, and R^7 and R^8, taken together with the adjacent carbon atoms to which they are bonded, are joined together to form the same or different group selected from an aromatic or a cyclic group with at least one of the aromatic or cyclic groups possessing one or more polymerizable moieties;

(b) monomer; and

(c) optional crosslinking agent,

wherein said polymer undergoes a detectable color change upon exposure to a biogenic amine.

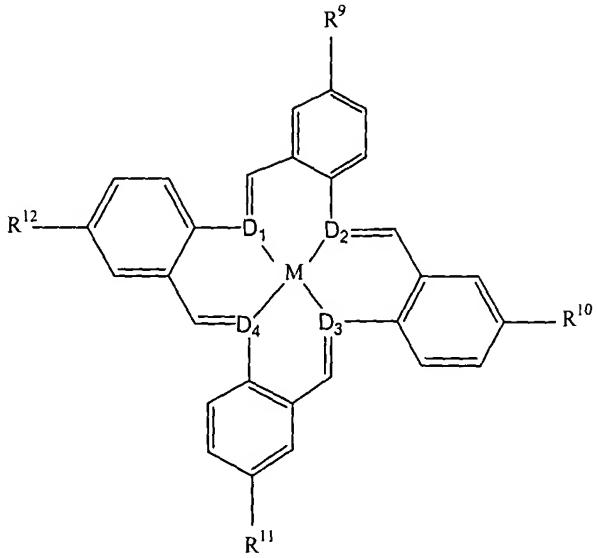
2. The polymer of Claim 1 wherein the aromatic groups to which R^1 and R^2, R^3 and R^4, R^5 and R^6, and R^7 and R^8 can form when taken together with the adjacent carbon atoms to which they are bonded and joined together are selected from the group consisting of benzene rings, naphthalene rings, anthracene rings, phenanthrene rings, and thiophene rings.

3. The polymer of Claim 1 wherein in the macrocyclic transition metal complex M is nickel(II) or palladium (II) and D_1, D_2, D_3, and D_4 are N.

4. The polymer of Claim 2 wherein in the macrocyclic transition metal complex M is nickel(II) or palladium (II) and D_1, D_2, D_3, and D_4 are N.

5. The polymer of Claim 1 wherein the biogenic amine is selected from the group consisting of cadaverine, putrescine and histamine.

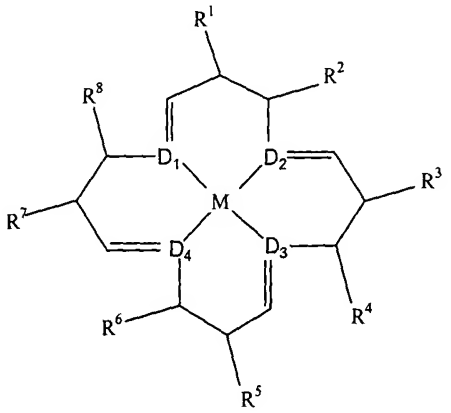
6. The polymer of Claim 1 wherein the a macrocyclic transition metal complex is of the formula:



wherein M is nickel(II) or palladium(II), D_1, D_2, D_3, and D_4 are N, and R^9, R^{10}, R^{11} and R^{12} are styrene, vinyl, amine or carboxyl.

7. A molecularly imprinted polymer formed by the steps of:

(a) providing the reaction product of (i) a four-coordinate a macrocyclic transition metal complex of the general formula:



wherein M is a transition metal ion; D_1, D_2, D_3 and D_4 can be the same or different and can be N or P; and each of R^1 and R^2, R^3 and R^4, R^5 and R^6, and R^7 and R^8, taken together with the adjacent carbon atoms to which they are bonded, are joined together to form the same or different group selected from an aromatic or a cyclic group with at least one of the aromatic or cyclic groups possessing one or more polymerizable moieties, and (ii) a target molecule comprising biogenic amine, said reaction product possessing a four or six-coordinate geometry;

(b) copolymerizing the reaction product of step (a) with monomer and crosslinking agent to form a polymer; and

(c) removing the target molecule from the polymer to provide a molecularly imprinted polymer which selectively binds to the target molecule and undergoes a detectable color change when the target molecule binds thereto.

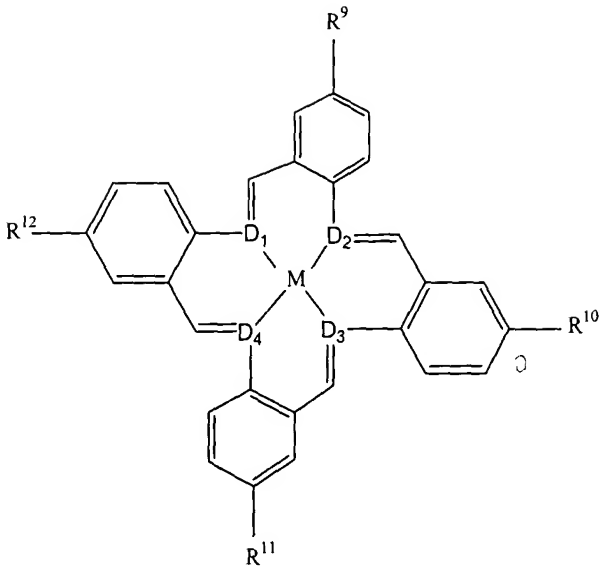
8. The molecularly imprinted polymer of Claim 7 wherein the aromatic groups to which R^1 and R^2, R^3 and R^4, R^5 and R^6, and R^7 and R^8 can form when taken together with the adjacent carbon atoms to which they are bonded and joined together are selected from the group consisting of benzene rings, naphthalene rings, anthracene rings, phenanthrene rings, and thiophene rings.

9. The molecularly imprinted polymer of Claim 7 wherein in the macrocyclic transition metal complex M is nickel(II) or palladium (II) and D_1, D_2, D_3, and D_4 are N and wherein the reaction product formed in step (a) possesses a four coordinate geometry.

10. The molecularly imprinted polymer of Claim 7 wherein in the macrocyclic transition metal complex M is iron (II) and D_1, D_2, D_3, and D_4 are N and wherein the reaction product formed in step (a) possesses a six coordinate geometry.

11. The molecularly imprinted polymer of Claim 7 wherein the biogenic amine is selected from the group consisting of cadaverine, putrescine and histamine, we should claim Fe (II) too, since it would be the metal of choice for histamine.

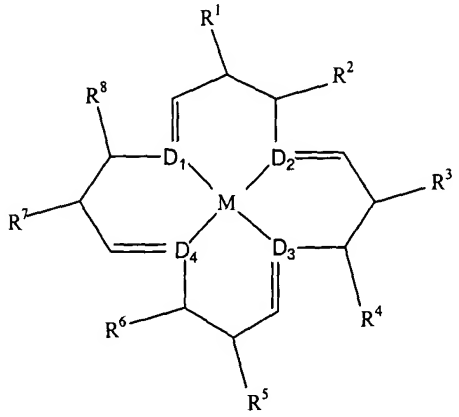
12. The molecularly imprinted polymer of Claim 7 wherein the a macrocyclic transition metal complex is of the formula:



wherein M is nickel(II), palladium(II) or iron (II), D_1, D_2, D_3, and D_4 are N, and R^9, R^{10}, R^{11} and R^{12} are styryl, vinyl, amine, carboxyl, hydroxyl, halomethyl, dithioester, carboxylic acid, acid chloride or peroxy.

13. A process for preparing a polymer comprising:

copolymerizing a macrocyclic transition metal complex of the general formula:



wherein M is a transition metal ion; D_1, D_2, D_3 and D_4 can be the same or different and can be N or P; and each of R^1 and R^2, R^3 and R^4, R^5 and R^6, and R^7 and R^8, taken together with the adjacent carbon atoms to which they are bonded, are joined together to form the same or

different group selected from an aromatic or a cyclic group with at least one of the aromatic or cyclic groups possessing one or more polymerizable moieties, monomer and optional crosslinking agent, wherein said polymer undergoes a detectable color change upon exposure to a biogenic amine.

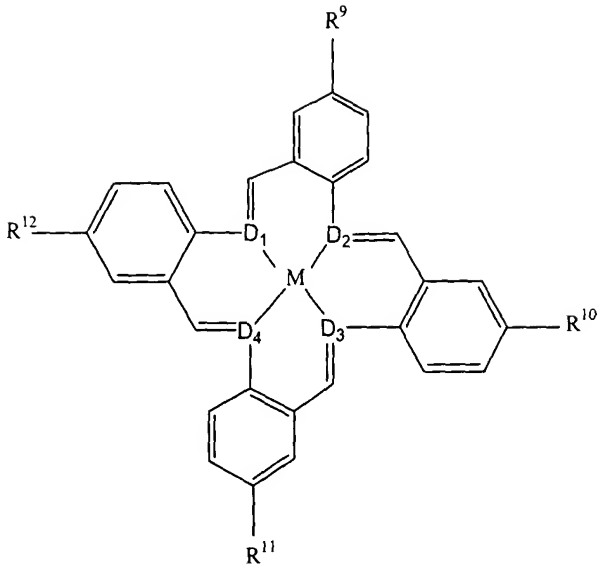
14. The process of Claim 13 wherein the aromatic groups to which R^1 and R^2, R^3 and R^4, R^5 and R^6, and R^7 and R^8 can form when taken together with the adjacent carbon atoms to which they are bonded and joined together are selected from the group consisting of benzene rings, naphthalene rings, anthracene rings, phenanthrene rings, and thiophene rings.

15. The process of Claim 13 wherein in the macrocyclic transition metal complex M is nickel(II), palladium (II) or iron (II) and D_1, D_2, D_3, and D_4 are N..

16. The process of Claim 14 wherein in the macrocyclic transition metal complex M is nickel(II), palladium (II) or iron (II) and D_1, D_2, D_3, and D_4 are N.

17. The process of Claim 13 wherein the biogenic amine is selected from the group consisting of cadaverine, putrescine and histamine.

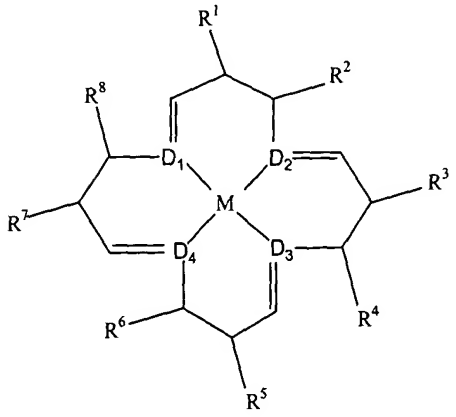
18. The process of Claim 13 wherein the a macrocyclic transition metal complex is of the formula:



wherein M is nickel(II), palladium(II) or iron (II), D_1, D_2, D_3, and D_4 are N, and R^9, R^{10}, R^{11} and R^{12} are styryl, vinyl, amine, carboxyl, hydroxyl, halomethyl, dithioester, carboxylic acid, acid chloride or peroxy..

19. A process for preparing a molecularly imprinted polymer which comprises:

(a) providing the reaction product of (i) a four-coordinate a macrocyclic transition metal complex of the general formula:



wherein M is a transition metal ion; D_1, D_2, D_3 and D_4 can be the same or different and can be N or P; and each of R^1 and R^2, R^3 and R^4, R^5 and R^6, and R^7 and R^8, taken together with the

adjacent carbon atoms to which they are bonded, are joined together to form the same or different group selected from an aromatic or a cyclic group with at least one of the aromatic or cyclic groups possessing one or more polymerizable moieties, and (ii) a target molecule comprising biogenic amine, said reaction product possessing a six-coordinate geometry;

(b) copolymerizing the reaction product of step (A) with monomer and crosslinking agent to form a polymer; and

(c) removing the target molecule from the polymer to provide a molecularly imprinted polymer which selectively binds to the target molecule and undergoes a detectable color change when the target molecule binds thereto.

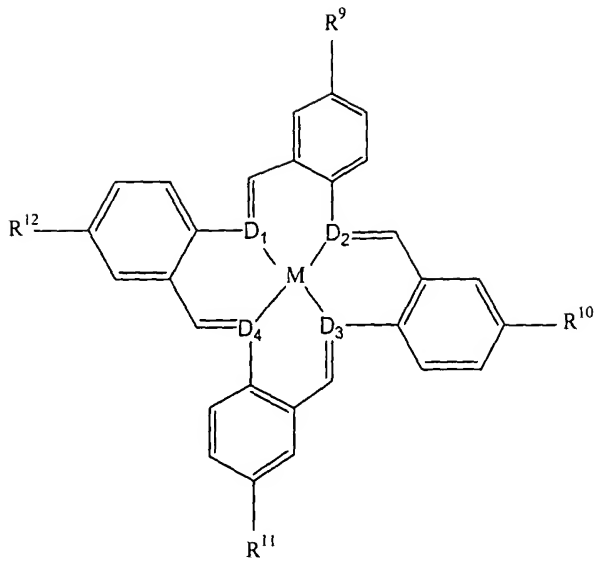
20. The process of Claim 19 wherein the aromatic groups to which R^1 and R^2, R^3 and R^4, R^5 and R^6, and R^7 and R^8 can form when taken together with the adjacent carbon atoms to which they are bonded and joined together are selected from the group consisting of benzene rings, naphthalene rings, anthracene rings, phenanthrene rings, and thiophene rings.

21. The process of Claim 19 wherein in the macrocyclic transition metal complex M is nickel(II), palladium (II) or iron (II) and D_1, D_2, D_3, and D_4 are N.

22. The process of Claim 20 wherein in the macrocyclic transition metal complex M is nickel(II), palladium (II) or iron (II) and D_1, D_2, D_3, and D_4 are N.

23. The process of Claim 19 wherein the biogenic amine is selected from the group consisting of cadaverine, putrescine and histamine.

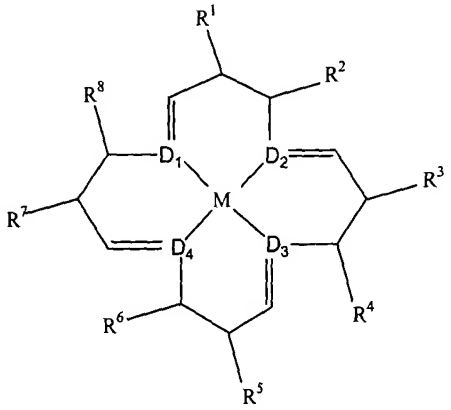
24. The process of Claim 19 wherein the a macrocyclic transition metal complex is of the formula:



wherein M is nickel(II), palladium(II) or iron (II), D_1, D_2, D_3, and D_4 are N, and R^9, R^{10}, R^{11} and R^{12} are styryl, vinyl, amine, carboxyl, hydroxyl, halomethyl, dithioester, carboxylic acid, acid chloride or peroxy.

25. A sensor for detecting the presence of biogenic amine in, on or in association with a fluid which comprises a polymer and a support structure having a surface, the polymer being attached to the support structure as a coating thereon,

wherein the polymer is formed by the steps of:copolymerizing a macrocyclic transition metal complex of the general formula:



wherein M is a transition metal ion; D_1, D_2, D_3 and D_4 can be the same or different and can be N or P; and each of R^1 and R^2, R^3 and R^4, R^5 and R^6, and R^7 and R^8, taken together with the adjacent carbon atoms to which they are bonded, are joined together to form the same or different group selected from an aromatic or a cyclic group with at least one of the aromatic or cyclic groups possessing one or more polymerizable moieties, monomer and crosslinking agent,

wherein said polymer undergoes a detectable color change upon exposure to a biogenic diamine.

26. The sensor of Claim 25 wherein the structure comprises a plastic sheet, film or tray which is utilized in the packaging of food products.

27. The sensor of Claim 25 wherein the structure is an optical fiber.

28. The sensor of Claim 25 wherein the biogenic amine is selected from the group consisting of cadaverine, putrescine and histamine.

29. The sensor of Claim 25 wherein the macrocyclic transition metal complex is first reacted with a target molecule comprising a biogenic diamine prior to copolymerizing the complex, monomer and crosslinking agent, and thereafter the target molecule is removed from the polymer to provide a molecularly imprinted polymer which selectively binds to the target molecule and undergoes a detectable color change when the target molecule binds thereto.

30. The sensor of Claim 25 wherein the color change is visible.

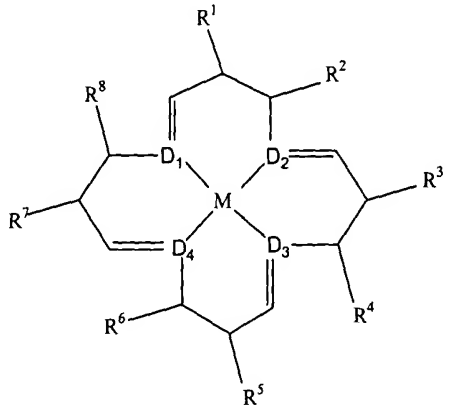
31. The sensor of Claim 25 wherein the color change is from yellow to crimson when the transition metal ion is nickel (II) or iron (II) and is from green to purple when the transition metal ion is palladium (II).

32. A food container comprising the polymer of Claim 1.

33. A food container comprising the polymer of Claim 7.

34. A method for detecting a biogenic amine, comprising:

providing a polymer comprising the reaction product of a macrocyclic transition metal complex of the general formula:



wherein M is a transition metal ion; D_1, D_2, D_3 and D_4 can be the same or different and can be N or P; and each of R^1 and R^2, R^3 and R^4, R^5 and R^6, and R^7 and R^8, taken together with the adjacent carbon atoms to which they are bonded, are joined together to form the same or different group selected from an aromatic or a cyclic group with at least one of the aromatic or cyclic groups possessing one or more polymerizable moieties, monomer and crosslinking agent,

exposing the polymer to a food product or body fluid; and,

detecting any change in color by the polymer, said detected change being indicative of the presence of biogenic amine in, on or in association with the food product or body fluid.

35. The method of Claim 34 wherein the aromatic groups to which R^1 and R^2, R^3 and R^4, R^5 and R^6, and R^7 and R^8 can form when taken together with the adjacent carbon atoms to

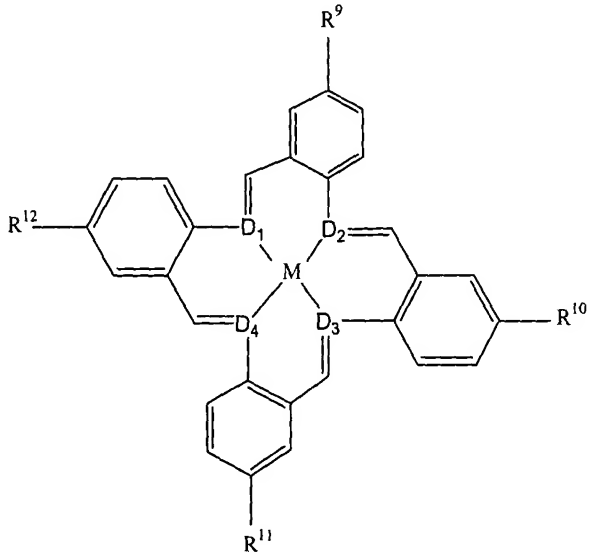
which they are bonded and joined together are selected from the group consisting of benzene rings, naphthalene rings, anthracene rings, phenanthrene rings, and thiophene rings.

36. The method of Claim 34 wherein in the macrocyclic transition metal complex M is nickel(II), palladium (II) or iron (II) and D_1, D_2, D_3, and D_4 are N.

37. The method of Claim 35 wherein in the macrocyclic transition metal complex M is nickel(II), palladium (II) or iron (II) and D_1, D_2, D_3, and D_4 are N.

38. The method of Claim 34 wherein the biogenic amine is selected from the group consisting of cadaverine, putrescine and histamine.

39. The method of Claim 34 wherein the a macrocyclic transition metal complex is of the formula:



wherein M is nickel(II), palladium(II) or iron (II), D_1, D_2, D_3, and D_4 are N, and R^9, R^{10}, R^{11} and R^{12} are styryl, vinyl, amine, carboxyl, hydroxyl, halomethyl, dithioester, carboxylic acid, acid chloride or peroxy.

40. The method of Claim 34 wherein the macrocyclic transition metal complex is first reacted with a target molecule comprising biogenic diamine prior to copolymerizing the complex, monomer and crosslinking agent, and thereafter the target molecule is removed from the polymer to provide a molecularly imprinted polymer which selectively binds to the target molecule and undergoes a detectable color change when the target molecule binds thereto.

41. The method of Claim 34 wherein the color change is visible.

42. The method of Claim 34 25 wherein the color change is from yellow to crimson when the transition metal ion is nickel (II) or iron (II) and is from green to purple when the transition metal ion is palladium (II).

43. A device for detecting a biogenic amine in a fluid comprising:

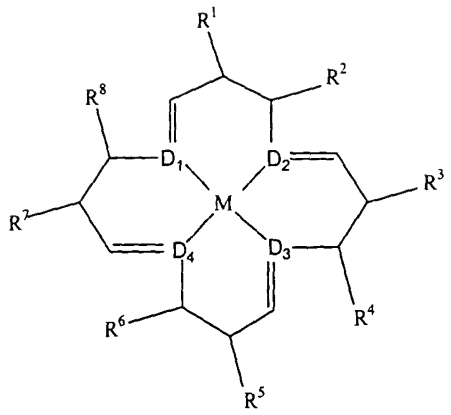
(a) a compartment having an inlet traversed by the fluid;

(b) a filtration unit mounted in the compartment downstream from the inlet and configured to filter out impurities in the fluid from the biogenic amine; and,

(c) a biogenic amine-detecting material located in the compartment downstream from the filter to indicate the presence of the biogenic amine wherein said biogenic amine-detecting material undergoes a detectable color change upon exposure to a biogenic amine..

44. The device of Claim 43 wherein the filtration unit possesses a pore size to filter impurities greater than one micron.

45. The device of Claim 43 wherein the biogenic amine-detecting material comprises a macrocyclic transition metal complex of the general formula:



wherein M is a transition metal ion; D_1, D_2, D_3 and D_4 can be the same or different and can be N or P; and each of R^1 and R^2, R^3 and R^4, R^5 and R^6, and R^7 and R^8, taken together with the adjacent carbon atoms to which they are bonded, are joined together to form the same or different group selected from an aromatic or a cyclic group with at least one of the aromatic or cyclic groups possessing one or more polymerizable moieties.

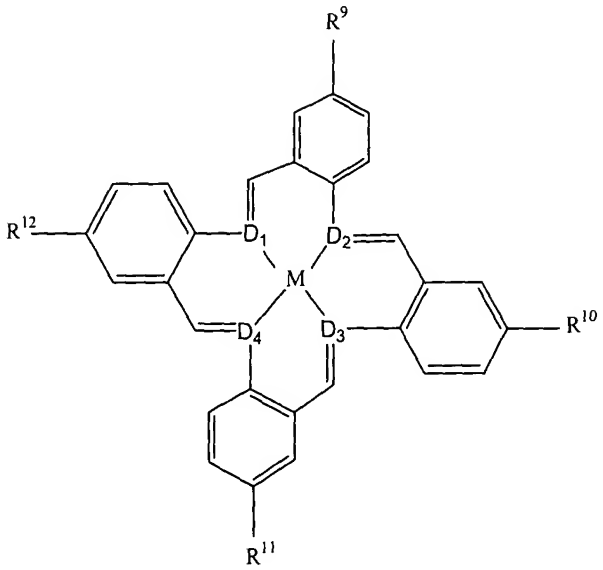
46. The device of Claim 43 wherein the aromatic groups to which R^1 and R^2, R^3 and R^4, R^5 and R^6, and R^7 and R^8 can form when taken together with the adjacent carbon atoms to which they are bonded and joined together are selected from the group consisting of benzene rings, naphthalene rings, anthracene rings, phenanthrene rings, and thiophene rings.

47. The device of Claim 43 wherein in the macrocyclic transition metal complex M is nickel(II), palladium (II) or iron (II) and D_1, D_2, D_3, and D_4 are N.

48. The device of Claim 46 wherein in the macrocyclic transition metal complex M is nickel(II), palladium (II) or iron (II) and D_1, D_2, D_3, and D_4 are N.

49. The device of Claim 43 wherein the biogenic amine to be detected is selected from the group consisting of cadaverine, putrescine and histamine.

50. The device of Claim 43 wherein the macrocyclic transition metal complex is of the formula:



wherein M is nickel(II), palladium(II) or iron (II), D_1, D_2, D_3, and D_4 are N, and R^9, R^{10}, R^{11} and R^{12} are styryl, vinyl, amine, carboxyl, hydroxyl, halomethyl, dithioester, carboxylic acid, acid chloride or peroxy.

51. The device of Claim 45 wherein the biogenic amine-detecting material further comprises an inert oxide selected from the group consisting of silica gel, titanium dioxide, titania oxide, cellulose and alumina.

52. The device of Claim 43 which is a pipette or a syringe.

53. The device of Claim 51 which is a pipette or a syringe.

54. The device of Claim 43 wherein the fluid is associated with a food product.

55. The device of Claim 43 wherein the fluid is a body fluid.

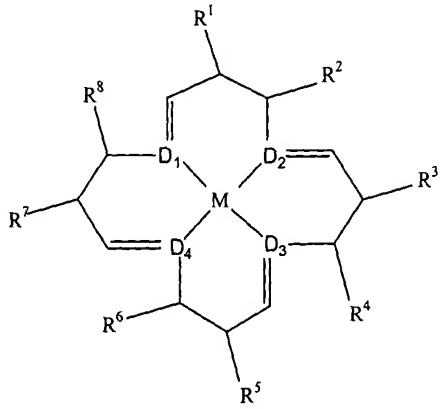
56. A test kit for determining the presence or absence of a biogenic amine in a representative sample of fluid, the kit comprising one or more of the devices of Claim 43.

57. A test kit for determining the presence or absence of a biogenic amine in a representative sample of fluid, the kit comprising one or more of the devices of Claim 45.

58. A test kit for determining the presence or absence of a biogenic amine in a representative sample of fluid, the kit comprising one or more of the devices of Claim 50.

59. A test kit for determining the presence or absence of a biogenic amine in a representative sample of fluid, the kit comprising one or more of the devices of Claim 51.

60. A method for detecting the presence of biogenic amine in a fluid, comprising: exposing a fluid to a macrocyclic transition metal complex of the general formula:



wherein M is a transition metal ion; D_1, D_2, D_3 and D_4 can be the same or different and can be N or P; and each of R^1 and R^2, R^3 and R^4, R^5 and R^6, and R^7 and R^8, taken together with the adjacent carbon atoms to which they are bonded, are joined together to form the same or different group selected from an aromatic or a cyclic group with at least one of the aromatic or cyclic groups possessing one or more polymerizable moieties; and,

detecting any change in color by the macrocyclic transition metal complex, said detected change being indicative of the presence of biogenic amine in the fluid.

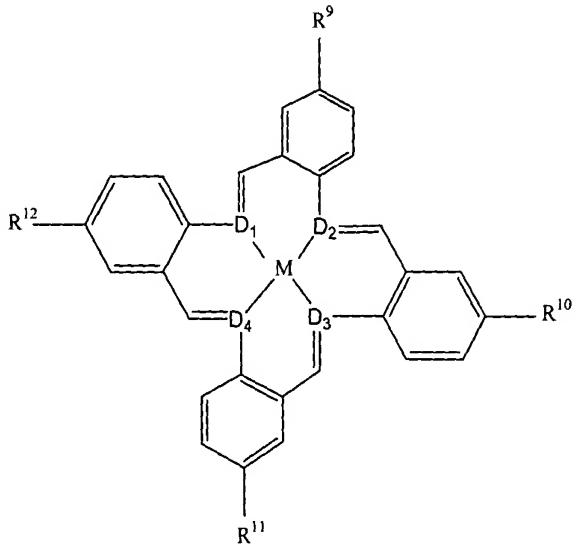
61. The method of Claim 60, wherein the aromatic groups to which R^1 and R^2, R^3 and R^4, R^5 and R^6, and R^7 and R^8 can form when taken together with the adjacent carbon atoms to which they are bonded and joined together are selected from the group consisting of benzene rings, naphthalene rings, anthracene rings, phenanthrene rings, and thiophene rings.

62. The method of Claim 60 wherein in the macrocyclic transition metal complex M is nickel(II), palladium (II) or iron (II) and D_1, D_2, D_3, and D_4 are N.

63. The method of Claim 61 wherein in the macrocyclic transition metal complex M is nickel(II), palladium (II) or iron (II) and D_1, D_2, D_3, and D_4 are N.

64. The method of Claim 60 wherein the biogenic amine to be detected is selected from the group consisting of cadaverine, putrescine and histamine.

65. The method of Claim 60 wherein the macrocyclic transition metal complex is of the formula:



wherein M is nickel(II), palladium(II) or iron (II), D_1, D_2, D_3, and D_4 are N, and R^9, R^{10}, R^{11} and R^{12} are styryl, vinyl, amine, carboxyl, hydroxyl, halomethyl, dithioester, carboxylic acid, acid chloride or peroxy.

66. The method of Claim 60 wherein the macrocyclic transition metal complex further comprises conjugate bases of a fluorescent agent compound.

67. The method of Claim 66 wherein the fluorescent agent compound is a fluorophore.

68. The method of Claim 67 wherein the fluorophore is selected from the group consisting of 9-anthracenecarboxylic acid, 1-naphthoic acid and carboxylic acid containing fluorosceins

69. The method of Claim 60 wherein the fluid is associated with meat or fish.

70. The method of Claim 60 wherein the fluid is a body fluid